AIR QUALITY PERMIT

Issued to: PPL Montana, LLC
P.O. Box 38
Colstrip, MT 59323

Permit: #0513-06
Administrative Amendment (AA) Request
Received: 10/23/07
Department Decision on AA Issued: 12/07/07
Final Permit Issued:
AFS #: 087-0008

An air quality permit, with conditions, is hereby granted to PPL Montana, LLC Colstrip (Colstrip) pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq*., as amended, for the following:

SECTION I: Permitted Facilities

A. Permitted Facility

PPL Montana, LLC operates the Colstrip Units 1, 2, 3, and 4 tangential coal-fired boilers and associated equipment for the generation of electricity. The Colstrip facility is located in Section 2, Township 2 North, Range 41 East, in Rosebud County, Montana, that is on Willow Avenue and Warehouse Road. A complete listing of facility equipment is found in the Permit Analysis.

B. Current Permit Action

On October 23, 2007, PPL Montana, LLC submitted a request for an administrative amendment to Permit #0513-05. The request was to incorporate revised nitrogen oxides (NO_x) standards for Colstrip's Units 3 and 4, as stipulated by Consent Decree CV-07-40-BLG-RFG-CSO entered on May 14, 2007. In addition, the Department was requested to clarify that the compliance demonstration for the revised limits would be demonstrated for an "operating day" firing any fuel, which would go beyond the Consent Decree requirements.

SECTION II: Conditions and Limitations

A. Emission Limitations and Control Requirements

1. Colstrip shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed on or before November 23, 1968, that exhibit an opacity of 40% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

2. Colstrip shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304 and ARM 17.8.752).

3. Colstrip shall not cause or authorize emissions to be discharged into the outdoor atmosphere from the truck dump and lime silo bin vent, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.752 and 40 CFR 60, Subpart Y).

4. Colstrip shall not cause or authorize emissions to be discharged into the atmosphere from haul roads, access roads, parking lots, or the general plant property without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308 and ARM 17.8.752).

5. Colstrip shall treat all unpaved portions of the access roads, parking lots, and general plant area with fresh water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation (ARM 17.8.749).

6. Colstrip shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart Y. Subpart Y affected sources include the truck dump station, the lime silo bin vent, and any other affected source constructed or modified after October 24, 1974 (ARM 17.8.340 and 40 CFR 60, Subpart Y).

7. Colstrip shall maintain and operate the skirting, minimal volumes, and small drop distances at the off-loading system and the bin vent filter system to provide the maximum air pollution control for that it was designed (ARM 17.8.752).

8. Units 1&2 shall be limited to a maximum of 700,800 tons of Syncoal during any rolling 12-month period (ARM 17.8.752).

9. Units 1&2 shall be limited to a maximum of 280,320 tons of petroleum coke during any rolling 12-month period (ARM 17.8.749).

10. The petroleum coke truck dump system particulate emissions shall be controlled by a partially enclosed dump basin, minimized dropping distances, covered conveyor belts, and an underground and enclosed feeder (ARM 17.8.749).

11. The petroleum coke rail dump system particulate emissions shall be controlled by an underground and enclosed dump basin, minimized dropping distances, covered conveyor belts, and an underground and enclosed feeder (ARM 17.8.749).

12. Colstrip shall maintain and operate the scrubbers to control emissions on Units 1&2 (ARM 17.8.749).

13. Colstrip shall be limited to a maximum fuel use of 28% petroleum coke for each of the Units 1&2, based on the maximum heat input value of the units (ARM 17.8.749).

14. Emissions of particulate matter from either Units 3 or 4 shall not exceed the following limits (ARM 17.8.749):

    a. 0.05 pounds per million British thermal units (lb/MMBtu); and

    b. 379 pounds per hour (lb/hr).

15. Emissions of sulfur dioxide (SO_2) from either Units 3 or 4 shall not exceed the following limits (these are stack emission limits; no percent sulfur reduction limit applies) (ARM 17.8.749):

    a. 761 lb/hr, averaged over any rolling 30-day period, calculated each day at midnight, using hourly data calculated each hour on the hour;

b. 0.18 lb/MMBtu heat input, averaged over any calendar-day, not to be exceeded more than once during any calendar-month;

c. 1363 lb/hr, averaged over any calendar-day, not to be exceeded more than once during any calendar-month; and

d. 1% sulfur content of the coal (as received).

16. Colstrip shall be limited to 4,140 lb/hr of SO_2, averaged over any 3-hour rolling period from both Units 3 and 4 stacks combined (ARM 17.8.749).

17. Emissions of nitrogen oxides (NO_x) from either Unit 3 or 4 shall not exceed the following limits:

a. 0.70 lb/MMBtu heat input when burning coal. If fuel other than coal is burned, the allowable NO_x emission rate shall be determined by the following equation (40 CFR 60, Subpart D):

$$E = \frac{0.2x + 0.3y + 0.7z}{x + y + z}$$

Where: E is the allowable emissions in lb/MMBtu heat input

x is the fraction of total heat input derived from gaseous fuels
y is the fraction of total heat input derived from liquid fuels
z is the fraction of total heat input derived from solid fuels.

b. 5301 lb/hr.

18. Beginning January 1, 2008, for Unit 3 and January 1, 2010, for Unit 4, Colstrip shall not exceed any of the following NO_x emission limits from Units 3 or 4 (ARM 17.8.749 and Consent Decree CV-07-40-BLG-RFC-CSO entered 5/14/07):

a. 30-day rolling average emission rate of:

i. 0.18 lb/MMBtu weighted average for each hour that either unit is operating above 400 gross megawatts (MW); and

ii. 0.30 lb/MMBtu weighted average for each hour that either unit is operating at or below 400 gross MW

b. 1,363 lb/hr 30-day rolling average emission rate for each unit

c. 24-hour average emission rate of:

i. 0.25 lb/MMBtu weighted average for each hour that either unit is operating above 400 gross MW; and

ii. 0.30 lb/MMBtu weighted average for each hour that either unit is operating at or below 400 gross MW

d. 1,893 lb/hr 24-hour average emission rate for each unit.

For the purposes of Section II.A.18, if a unit is operating above 400 MW for part of one hour and at or below 400 MW for the remainder of that hour, the applicable emissions limits shall be based on the average load for the hour. In addition, the emission rates for Section II.A.18 limits are considered for an operating day in which any fuel is combusted in the unit.

19. Colstrip shall operate digital controls, low-NO_x burners and overfire air on Unit 3 sufficient to meet the emissions limits in Section II.A.18 (ARM 17.8.749 and Consent Decree CV-07-40-BLG-RFC-CSO entered 5/14/07).

20. By January 1, 2009, Colstrip shall complete the final design and by July 1, 2009, Colstrip shall install and operate digital controls, low-NO_x burners and overfire air on Unit 4 sufficient to meet the Unit 4 emissions limits in Section II.A.18 (ARM 17.8.749 and Consent Decree CV-07-40-BLG-RFC-CSO entered 5/14/07).

21. The Unit 3&4 NO_x emission limits specified in Section II.A.18 shall apply at all times, including periods of start-up, shutdown, load fluctuation, maintenance and malfunction, regardless of cause (ARM 17.8.749 and Consent Decree CV-07-40-BLG-RFC-CSO entered 5/14/07).

22. Emissions from either Unit 3 or 4 shall not exhibit an opacity of 20% or greater over any 6-minute period. The opacity provisions of 40 CFR 60.42 are applicable (ARM 17.8.340).

23. Units 3 and 4 shall each be limited to a maximum heat input of 6.63×10^7 MMBtu over any rolling 12-month period (ARM 17.8.749).

B. Testing Requirements

1. Colstrip shall conduct annual stack tests, or another testing/monitoring schedule as may be approved by the Department, for total particulate and demonstrate compliance with the limitations in Section II.A.14. The testing shall be conducted in accordance with 40 CFR 60.46(b)(2)(i). Demonstrations of compliance with the opacity limits, if required during these tests, shall be based on certified opacity monitors unless otherwise specified by the Department (ARM 17.8.104 and ARM 17.8.105).

2. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

3. The Department may require further testing (ARM 17.8.105).

C. Monitoring Requirements for Units 3 and 4

1. Colstrip shall install, operate, calibrate, and maintain continuous emission monitoring systems (CEMS) for the following:

a. A CEMS for the measurement of SO_2 shall be operated on each stack (ARM 17.8.340 and 40 CFR 60.45).

b. A CEMS for the measurement of NO_x shall be operated on each stack

c. A CEMS for measurement of carbon dioxide or oxygen shall be operated on each stack (ARM 17.8.340 and 40 CFR 60.45).

d. A CEMS for the measurement of opacity shall be operated on each stack (ARM 17.8.340 and 40 CFR 60.45).

e. Continuous monitoring for stack gas temperature, stack gas moisture (where necessary), megawatt production, and Btu per hour (as a function of heat rate and megawatt production) shall be performed on each unit (40 CFR 52.21).

f. Colstrip shall maintain the data acquisition system such that load data in MW is recorded no less than once per minute (ARM 17.8.749 and Consent Decree CV-07-40-BLG-RFC-CSO entered 5/14/07).

2. All continuous monitors shall be operated, excess emissions reported, and performance tests conducted in accordance with the requirements of 40 CFR Part 60, Subpart D, 40 CFR 60.7, 60.8, 60.11, 60.13, and 40 CFR 60, Appendix B Performance Specifications #1, #2 and #3, subject to the following:

a. The requirements of 40 CFR 60.48da - Compliance Provisions (40 CFR 60, Subpart Da) shall apply to Units 3 and 4 (40 CFR 52.21).

b. The requirements of 40 CFR 60.49da - Emission Monitoring (40 CFR 60, Subpart Da) shall apply to Units 3 and 4 (40 CFR 52.21).

c. The requirements of 40 CFR 60.50da - Compliance Determination Procedures and Methods (40 CFR 60, Subpart Da) shall apply to Units 3 and 4 (40 CFR 52.21).

d. The requirements of 40 CFR 60.51da - Reporting Requirements (40 CFR 60, Subpart Da) shall apply to Units 3 and 4 (40 CFR 52.21).

e. Colstrip shall operate the required monitors in accordance with the CEMS quality assurance (QA) plan submitted to the Environmental Protection Agency (EPA) in May 1998. This plan may be revised by Colstrip with the approval of the Department (40 CFR 52.21).

f. Compliance requirements of 40 CFR 60.11(a) shall be amended per Section II.D (40 CFR 52.21).

g. Each monitor modular part (i.e., opacity, SO_2, NO_x, diluent, and data handling units) of a continuous monitoring system shall attain a minimal annual on-line availability time of 85% and a minimal quarterly availability time of 75% for each individual quarter. Should any given yearly or quarterly availability time drop below these respective limits, Colstrip shall, within 90 days of the end of the first unexcused year or quarter in question, cause to be delivered to the facility factory-tested and compatible monitor module(s) able to replace the monitor module(s) that had unacceptable availability times, unless Colstrip can excuse the unacceptable performance by demonstrating within 10 calendar-days of

the end of such year or quarter, that the reason for the poor availability time has not caused another previous occurrence of unacceptable availability, and the reason for the particular unavailability in question will be prevented in the future by a more effective maintenance/inventory program (40 CFR 52.21).

h. Upon two non-overlapping periods of unexcused, unacceptable availability of a module (yearly, quarterly, or combination), Colstrip shall (within 30 days of the end of the year or quarter of the second unacceptable availability period) install, calibrate, operate, maintain, and report emission data using the second compatible module required by 2.g. above (40 CFR 52.21).

i. Within 60 days of the end of the year of the quarter causing the second unacceptable availability period under section 2.h., Colstrip shall conduct a complete performance evaluation of the entire CEMS for that pollutant under 40 CFR 60.13(c) showing acceptability of the entire CEMS in question unless the module was the data handling unit alone. Within 75 days of the end of the year or quarter causing the second unacceptable availability period, Colstrip shall furnish the Department with a written report of such evaluations and tests demonstrating acceptability of the system (40 CFR 52.21).

j. In the event of a conflict between the requirements of the referenced federal regulations and the requirements of this permit, the requirements of this permit shall apply.

D. Compliance

1. Compliance with the particulate emission limits in Section II.A.14 shall be based on the source tests required by Section II.B.1 (ARM 17.8.105).

2. Compliance with the SO_2 emission limits in Section II.A.15 and 16 shall be based on the CEMS required by Section II.C.1.a and from any stack tests required by the state under the authority of ARM 17.8.104 (ARM 17.8.105 and 40 CFR 52.21).

3. Compliance with the SO_2 emission limit in Section II.A.15.d shall be based on available daily composite coal samples as measured by 40 CFR 60, Appendix A, Method 19 or another sampling schedule as approved by the Department. Records shall be maintained according to II.E.7 (ARM 17.8.749).

4. Compliance with the NO_x emission limits in Section II.A.17 shall be based on data from the CEMS required by Section II.C.1.b and from any stack tests required by the state under the authority of ARM 17.8.104 (ARM 17.8.105 and 17.8.104).

5. Compliance with the NO_x emission limits in Section II.A.18 shall be based on data from the CEMS required by Section II.C.1.b and from any stack tests required by the state under the authority of ARM 17.8.104. The reference methods for determining NO_X emission rates shall be those specified in 40 CFR Part 60. The NO_x CEMS shall be used in accordance with the operating requirements in 40 CFR Part 75 (ARM 17.8.104, 17.8.105, and Consent Decree

6. Compliance with the opacity limit in Section II.A.22 shall be based on data from the opacity monitor required by Section II.C.1.d and visual emissions observations in accordance with 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources (ARM 17.8.105).

7. Compliance with the heat input limit of Section II.A.23 shall be determined based on the total tons of coal combusted in each unit multiplied by a representative average BTU content for the coal (ARM 17.8.105).

E. Operational and Emission Inventory Reporting Requirements

1. Colstrip shall submit a written report of excess emissions and monitoring system performance as required by 40 CFR 60.7(c). For the purposes of the report, excess emissions shall be defined as any 6-minute, 3-hour, 24-hour or 30-day period, as applicable, in which the average emissions of the period of concern for opacity, NO_x, or SO_2 as measured by the CEMS, exceed the applicable emission limitation in Section II.A. For the purposes of reporting excess emissions for the periods:

   a. 6-minute average applies to each 6-minute non-overlapping period starting on the hour.

   b. 3-hour period applies to any running 3-hour period containing three contiguous 1-hour periods, starting on the hour.

   c. 24-hour period applies to any calendar-day.

   d. 30-day period applies to any running period of 30 consecutive calendar-days.

2. Colstrip shall submit the following information along with the excess emission reports:

   a. The fuel feed rate and associated production figures corresponding to all periods of excess emissions (40 CFR 52.21);

   b. The proximate analysis of the weekly composite sample of the fuel fired in each unit (40 CFR 52.21); and

   c. Date, time, and initial calibration values for each required calibration adjustment made on any monitor during the quarter, including any time that the monitor was removed or inoperable for any reason (40 CFR 52.21).

3. Colstrip will meet the performance standards and emission limitations established under Section II.A.18, to the number of significant digits provided. Colstrip shall report data to at least the number of significant digits in which the standard or limit is expressed (ARM 17.8.749 and Consent Decree CV-07-40-BLG-RFC-CSO entered 5/14/07).

4. Colstrip shall document, by month, the total British Thermal Unit (Btu) value of the fuel combusted in Units 3 and 4, based on the total tons of coal combusted in each unit multiplied by a representative average Btu content for the coal. By the 25th day of each month, Colstrip shall calculate the total amount of fuel combusted in Units 3 and 4 during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.23. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

5. Colstrip shall document, by month, the amount of Syncoal used. By the 25th day of each month, Units 1 and 2 shall total the amount of Syncoal used during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.8. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

6. Colstrip shall document, by month, the amount of petroleum coke used. By the 25th day of each month, Units 1 and 2 shall total the amount of petroleum coke used during the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.9. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

7. Colstrip shall supply the Department with annual production information for all emission points, as required, by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used for calculating operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

8. Colstrip shall submit a written report to verify compliance with the limitation in Section II.A.13. The written report shall be submitted quarterly to the Department (ARM 17.8.749).

9. Colstrip shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include a change of control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).

10. All records compiled in accordance with this permit must be maintained by Colstrip as a permanent business record for at least 5-years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM

17.8.749).

11. All records compiled in response to Consent Decree CV-07-40-BLG-RFC-CSO shall be retained (Consent Decree CV-07-40-BLG-RFC-CSO entered 5/14/07):

    a. Until December 31, 2020 for records concerning physical or operational changes undertaken in accordance with the requirements contained in Section II.A.18 – II.A.21; and

    b. Until December 31, 2017 for all other records.

SECTION III: General Conditions

A. Inspection - Colstrip shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if Colstrip fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving Colstrip of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.740, *et seq*. (ARM 17.8.756).

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals - Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection - As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.

G. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by Colstrip may be grounds for revocation of this permit, as required, by that section and rules adopted thereunder by the Board.

PERMIT ANALYSIS
PPL Montana, LLC
Permit #0513-06

I. Introduction/ Process Description

A. Facility Description

PPL Montana, LLC Colstrip (Colstrip) operates the Units 1, 2, 3 and 4 tangential coal-fired boilers and associated equipment for the generation of electricity. Colstrip is located in Section 2, Township 2 North, Range 41 East, in Rosebud County, Montana. The facility location is on Willow Avenue and Warehouse Road.

B. Permitted Equipment

Colstrip operates the following equipment, including, but not limited to:

Units 1 and 2

- Auxiliary Propane Boiler
- Coal Handling System
- Coal Piles
- Emergency Diesel Generators
- Internal Combustion Engine
- Plant Roads
- Process Ponds
- Underground Gasoline Tank
- Unit #1 Tangential Coal-Fired Boiler
- Unit #2 Tangential Coal-Fired Boiler
- Syncoal facility
- Petroleum Coke rail dump system
- Petroleum Coke truck dump system

Units 3 and 4

- Two coal-fired steam-generating electric power plants with a nominal heat input of 7573 million British thermal units per hour (MMBtu/hr) each (778 Megawatts each). Maximum heat input capacity to the boilers may be as high as 8000 MMBtu/hr, which would also increase the electrical production capacity.
- 16 venturi-type wet scrubbers (8 per unit) for particulate and sulfur dioxide (SO_2) control.
- Two stacks - 692 feet in height.
- Coal transportation, storage and handling facilities.
- Coal sampling facilities.
- Auxiliary equipment.

C. Permit History

On April 23, 1973, **Permit #513-111472 (#0513-00)** was issued to the Montana Power Company (MPC) Colstrip (Colstrip) for the construction of Colstrip Units 1&2, and on August 26, 1981, a permit with the same number was issued to Colstrip for the operation of Colstrip Units 1&2.

Permit #0513-01 was issued to Colstrip to include the installation and operation of a Syncoal Truck Dump and a lime silo bin vent. Syncoal fines and coarse product are combined to form a blend product that will be supplied to Units 1&2. The installation and operation of these sources will increase the allowable particulate emissions for Units 1&2 by 1.12 ton per year (TPY). Permit #0513-01 replaced Permit #0513-00 (513-111472).

Permit #1187 was issued to MPC on January 20, 1977, for the construction of Colstrip Units 3&4. Because the proposed facility was a major source under the Prevention of Significant Deterioration (PSD) program, the additional review requirements of the PSD program applied to the project. The state did not have authorization to implement the PSD program at the time of the application; therefore, the PSD review was conducted by the Environmental Protection Agency (EPA). EPA issued a PSD permit for the construction of the facility on September 11, 1979.

State **Permit #1187-M** was issued on February 5, 1980, and Permit **#1187-M2** was issued on May 26, 1981. The modifications were completed because of changes to the applicable rules and standards of the Administrative Rules of Montana (ARM).

On October 13, 1996, **Permit #1187-03** was issued and correctly identified the actual maximum heat input capacity of Colstrip Units 3&4. The units are each rated at a heat-input capacity of 7,573 MMBtu/hour with a production capacity of 778 Megawatts. These are nominal capacities for the facility and, depending on plant operating conditions, actual heat input to the facility may be as high as 8,000 MMBtu/hour.

Permit #1187-M2 and the EPA permit contained emission limits for particulate, SO_2, and oxides of nitrogen (NO_x) with units of pounds per million british thermal units (lb/MMBtu). To ensure that emissions from the facility were not higher than those that the original analysis was based, this permit established emission limits for these pollutants in the units of pounds per hour (lb/hour). The new emission limits were established based on the nominal heat input to the boilers of 7,573 MMBtu/hour multiplied by the current emission limits in lb/MMBtu. Permit #1187-03 also placed a yearly fuel consumption limit on each unit. The limit was equal to the heat input of each unit operating at the nominal heat input rate of 7,573 MMBtu/hr for 8,760 hours per year. This ensured that emissions of pollutants, that don't have limits in the permit, were not increased above current levels. The permit also incorporated requirements from the PSD permit issued by EPA in 1979. These requirements were incorporated at the request of MPC for the purpose of developing a comprehensive document that contained pertinent requirements from both the state permit and the EPA PSD permit. Permit #1187-03 replaced Permit #1187-M2.

On September 30, 1998, **Permit #1187-04** was issued to MPC for the Colstrip 3&4 facility. The alteration included incorporation of a 3-hour rolling average SO_2 limit, the 1% inlet sulfur standard that was inadvertently removed during the previous modification, and the removal of the inlet monitor requirement.

The 3-hour SO_2 limit was incorporated in the permit to ensure protection of the 3-hour SO_2 standard. During the last permit action, the maximum heat inputs for Units 3&4 were discovered to be 8,000 MMBtu/hr. Because these heat inputs were higher than those in the original permit, the Department of Environmental Quality Air Resources Management Bureau (Department) and MPC agreed that short-term SO_2 and NO_x emission limits would be implemented. The Department completed modeling for the short-term SO_2 emission limits. Colstrip was limited to a maximum of 4,273 lb/hr of

SO_2, averaged over any

rolling 3-hour period from both stacks combined. These limits allowed MPC the flexibility of operating Unit 3 or Unit 4 at a higher level at any one time, while continuing to ensure protection of the standard.

The 1% inlet sulfur limit existed in the original permit, but was inadvertently removed during a previous permit action. MPC continued to maintain compliance with the 1% inlet sulfur limit, even though it was not stated in the permit.

The requirement for the inlet sulfur monitor as a compliance demonstration for the inlet sulfur content was replaced with an on-going fuel-sampling analysis. The on-going fuel-sampling analysis yielded a more accurate account of the sulfur content of the fuel, as compared to the sulfur content being correlated to SO_2 emissions.

The permitting action was an alteration of Permit #1187-03 because of the change in the compliance demonstration for the 1% sulfur content limit. The 1% sulfur content limit and demonstration of compliance was included in the February 28, 1978, Board of Health and Environmental Sciences Findings of Fact and Conclusions of Law and Order. The alteration process allowed public involvement in the change in the compliance demonstration method. However, the permitting action did not result in any change in the emissions from the facility. **Permit #1187-04** replaced Permit #1187-03.

In letters dated June 18, 1999, and August 16, 1999, the Montana Power Company and PPL Montana, LLC requested that the permits for Colstrip Units 1&2 and Colstrip Units 3&4 be transferred to reflect the new ownership. The transfer of the permits was to occur when the transfer of ownership to PPL Montana, LLC was final. Through the Department's review, it was determined that Colstrip Units 1, 2, 3, and 4 would now be defined as one source. Therefore, the permit modification transferred ownership, as well as combined Permits #0513-01 and #1187-04. The permit conditions remained the same, but were simply combined into one permit. **Permit #0513-02** replaced Permits #0513-01 and #1187-04.

On September 10, 2000, **Permit #0513-03** was issued to Colstrip to conduct a test burn of petroleum coke/Syncoal/Rosebud coal fuel combination in Units 1&2. A petroleum coke consumption limit was placed in the permit to ensure that the proposed test burn did not exceed 15 tons per year of any pollutant. Because the emissions from this project were less than 15 tons per year of any pollutant, the project occurred in accordance with the ARM 17.8.745(1)(d). Permit #0513-03 replaced Permit #0513-02.

On July 7, 2001, **Permit #0513-04** was issued to Colstrip to add petroleum coke to the list of fuels to be used in Units 1 and 2 that are currently permitted to burn Syncoal and Rosebud coal. The permitting action limited the amount of petroleum coke that may be burned in Units 1 and 2 and was not considered a major modification under the PSD regulations because the facility was capable of accommodating petroleum coke. The conditions associated with this permitting action are Section II.A.9, 10, 11, 12, and 13, Section II.B.3 and Section II.F. Permit #0513-04 replaced Permit #0513-03.

On January 11, 2005, Arnold & Porter LLP, on behalf of Colstrip, submitted a request for an administrative amendment to Permit #0513-04. The request was to reduce the 3-hour rolling average SO_2 emissions limit (combined stack limit) for Units 3&4 from 4,273 pounds/hour to 4,140 lb/hr.

The request was submitted in response to an outstanding concern of the Department and the Northern Cheyenne Tribe regarding emissions modeling for SO_2 increment

consumption conducted for the issuance of the 1979 PSD permit for Units 3 and 4. Included in the permit application, Colstrip submitted AERMOD modeling to demonstrate compliance with the Class I PSD increment for SO_2 on the Northern Cheyenne Reservation. The Department, in consultation with EPA Region VIII and the Northern Cheyenne Tribe, requested an additional sensitivity analysis be conducted at a 75% load scenario to comply with national modeling guidance and the model's demonstrated sensitivity to plume rise. Colstrip submitted the sensitivity analysis demonstrating that the proposed SO_2 limit of 4,140 lb/hr would protect the 3-hour increment on the Northern Cheyenne Reservation.

In addition, Colstrip submitted a request to the Department on November 20, 2000, to remove the ambient air quality monitoring requirements from Permit #0513-04 for Units 3&4. Based on the request and additional information submitted on October 3, 2001, the Department approved the removal of the monitoring requirements. The Department sent a letter on October 19, 2001, after PPL demonstrated that the potential to cause a violation of the ambient standard is minimal at all sites and monitoring may be removed as provided for in the October 1998 Department guidance.

The permit format, language, and rule references were updated to reflect current Department permit format, language and rule references. **Permit #0513-05** replaced Permit #0513-04.

D. Current Permit Action

On October 23, 2007, PPL Montana submitted a request for an administrative amendment to Permit #0513-05. The request was to incorporate revised NO_x standards for Colstrip's Units 3 and 4, as stipulated by Consent Decree CV-07-40-BLG-RFG-CSO entered on May 14, 2007. In addition, the Department was requested to clarify that the compliance demonstration for the revised limits would be demonstrated for an "operating day" firing any fuel, which would go beyond the Consent Decree requirements. **Permit #0513-06** replaces Permit #0513-05.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 - General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This section includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written

request of the Department, provide the facilities and necessary equipment, including instruments and sensing devices, and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotate (MCA).

   Colstrip shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality, including, but not limited to:

1. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
2. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
3. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
4. ARM 17.8.213 Ambient Air Quality Standard for Ozone
5. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
6. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
7. ARM 17.8.221 Ambient Air Quality Standard for Visibility
8. ARM 17.8.222 Ambient Air Quality Standard for Lead
9. ARM 17.8.223 Ambient Air Quality Standard for PM-10

Colstrip must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. (1) This rule requires that no person may cause or authorize emissions to be discharged into an outdoor atmosphere from any source installed on or before November 23, 1968, that exhibit an opacity of 40% or greater averaged over 6 consecutive minutes. (2) This rule requires that no person may cause or authorize emissions to be discharged to an outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particular matter. (2) Under this rule, Colstrip shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This section requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this section.

5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. (4) Commencing July 1, 1972, no person shall burn liquid or solid fuels containing sulfur in excess of 1 pound of sulfur per million Btu fired. (5) Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions.

6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such a tank is equipped with a vapor loss control device as described in (1) of this rule, or is a pressure tank as described in (1) of this rule.

7. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates, by reference, 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS).

   The Colstrip truck dump and silo bin vent are considered NSPS affected facilities because these sources meet the definition of a coal storage system and transfer and loading system constructed after October 24, 1974, under 40 CFR 60, Subpart Y, Standards of Performance for Coal Preparation Plants.

   Subpart D, Standard of Performance for Fossil-Fuel Fired Steam Generators. This subpart does apply to Units 1, 2, 3, and 4 because they have the capabilities of firing fossil fuel at a heat input rate of more than 250 MMBtu/hr and were constructed after August 17, 1971.

   Subpart Da, Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978. This section does not apply to Units 3 and 4 because construction on the units had commenced prior to 1978. However, some sections of Subpart Da have been incorporated by reference into this permit.

D. ARM 17.8, Subchapter 5 - Air Quality Permit Application, Operation and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Colstrip was not required to submit an application fee for the current permit action because it is considered an administrative amendment.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that pro-rate the required fee amount.

E. ARM 17.8, Subchapter 7 - Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits -- When Required. This rule requires a facility to obtain an air quality permit or permit alteration to construct, alter, or use any air contaminant sources that have the Potential to Emit (PTE) more than 25 tons per year of any pollutant. Colstrip has the PTE greater than 25 tons per year of nitrous oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), volatile organic compounds (VOC), particulate matter (PM), and particulate matter with an aerodynamic diameter of less than 10 microns (PM_{10}); therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits – General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits – Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit program.

5. ARM 17.8.748 New or Modified Emitting Units – Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration or use of a source. Colstrip was not required to submit an application for the current permit action because it is considered an

administrative amendment. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. Colstrip was not required to submit a public notice for the current permit action because it is considered an administrative amendment.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Colstrip of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack which do not result in an increase in emissions because of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM

17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. This rule states an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the Federal Clean Air Act (FCAA) that it would emit, except as this subchapter would otherwise allow.

Colstrip is a major source; however, this permitting action does not trigger a major modification because it is considered an administrative amendment. Therefore, PSD does not apply to this permitting action.

G. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

a. PTE > 100 tons/year of any pollutant;

b. PTE > 10 ton/year of any one Hazardous Air Pollutant (HAP), PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or

c. Sources with the PTE > 70 ton/year of PM_{10} in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing Montana Air Quality Permit #0513-06, the following conclusions were made:

a. The facility's PTE is greater than 100 ton/year for several pollutants.

b. The facility's PTE is less than 10 ton/year of any one HAP and less than 25 tons/year of all HAPs.

c. This source is not located in a serious PM_{10} nonattainment area.

d. This facility is subject to 40 CFR 60, Subpart D and Subpart Y.

e. This facility is not subject to any current NESHAP standards.

f. This source is a Title IV affected source.

g. This source is not an EPA designated Title V source.

Based on these facts, the Department has determined that Colstrip is a major source of emissions as defined under Title V. Colstrip was issued Title V Operating Permit #OP0513-03. The current permit action will require a significant modification to the Title V permit.

III. BACT Determination

A BACT determination is required for each new or altered source. Colstrip shall install on the new or altered source the maximum air pollution control capability, which is technically practicable and economically feasible, except that BACT shall be utilized.

A BACT analysis was not required for the current permit action because the current permit action is considered an administrative permit action.

IV. Emission Inventory

A detailed emissions inventory is on file with the Department.

V. Existing Air Quality

The current permit action is considered an administrative amendment and will not result in an increase in emissions.

Colstrip submitted a modeling demonstration to the Department on September 22, 2004, concerning the impact of emissions from Colstrip Units 3 and 4 on the 3-hour and 24-hour SO_2 increments on the Northern Cheyenne Reservation. The Department and PPL, with participation by the Northern Cheyenne Tribe and EPA Region VIII, discussed this modeling and any appropriate refinements.

The modeling raised concerns that emissions from Colstrip Units 3 & 4 at the allowable 3-hour limit could cause a violation of the increment on the Northern Cheyenne Reservation. Based on the modeling, PPL submitted a request for an administrative amendment to the facility's Montana Air Quality Permit #0513-04 to reduce the 3-hour rolling average SO_2 emissions limit (combined stack limit) for Units 3 & 4 from 4,273 lb/hr to 4,140 lb/hr.

The Department requested one further sensitivity analysis be conducted to comply with the national modeling guidance and the model's demonstrated sensitivity to plume rise because the limit requested by PPL left no room for error. The sensitivity analysis submitted by PPL demonstrated that the proposed limit would protect the 3-hour increment on the Northern Cheyenne Reservation.

VI. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department has conducted a private property taking and damaging assessment and has determined there are no taking or damaging implications.

VII. Environmental Assessment

This permitting action will not result in an increase of emissions from the facility and is

considered an administrative action; therefore, an Environmental Assessment is not required.

Analysis Prepared By: Christine Weaver
Date: November 21, 2007